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CODE OF PRACTICE FOR ANTE-MORTEM AND POST-MORTEM INSPECTION OF POULTRY

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CODE OF PRACTICE FOR ANTE-MORTEM AND POST-MORTEM INSPECTION OF POULTRY

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AMENDMENT NO. 1 JULY 1989
TO
IS : 6559 - 1972 CODE OF PRACTICE FOR
ANTE-MORTEM AND POST-MORTEM
INSPECTION OF POULTRY

(*Page 4, clause 2.9*) — Substitute the following for the existing clause:
'Poultry — Includes chicken, duck, turkeys, guinea fowl and quail.'

(*Page 4, clause 3.4, line 1*) — Insert the words 'head gear' after the words 'gum boots'.

(*Page 6, clause 4.4*) — Insert the following after the existing matter:
'The meat inspector shall use gum boots, head gear, protective clothing and hand gloves while inspecting.'

(AFDC 18)

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Indian Standard

CODE OF PRACTICE FOR ANTE-MORTEM AND POST-MORTEM INSPECTION OF POULTRY

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 30 May 1972, after the draft finalized by the Meat and Meat Products Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 Proper ante-mortem inspection of all poultry is essential to ensure that they are not affected with any disease or other condition which may render the flesh unwholesome. Post-mortem inspection is essential to detect poultry which may be diseased and thereby rendered unfit for human consumption. At present there is no uniform procedure for ante-mortem and post-mortem examination of poultry on an all-India basis. The formulation of this standard, will therefore, meet the need for a uniform procedure for the country.

0.3 In the formulation of this standard, Indian Veterinary Research Institute, Izatnagar and the Madras Veterinary College, Madras have been of considerable help.

1. SCOPE

1.1 This standard prescribes the procedure for the ante-mortem and post-mortem inspection of poultry.

2. TERMINOLOGY

2.0 For the purpose of this standard the following definitions shall apply.

2.1 **Carcass** — That part of the body of the poultry left after it has been slaughtered, bled, defeathered and eviscerated.

2.2 **Condemned** — Carcasses, parts or organs so marked unfit for human consumption meant to be destroyed or rendered unfit for food purposes.

2.3 **Dressing Plant** — Any building, premise or place used in connection with business of holding, slaughtering, dressing and chilling poultry intended for human consumption.

2.4 Local Authority — A local area which is a municipality, municipal board or municipal corporation; a cantonment, the cantonment authority; a notified area; the notified committee; and such authority of any other local area as may be prescribed by the Central or State Government.

2.5 Meat — Flesh and other edible parts of a bird intended for human consumption.

2.6 Meat Inspector — shall be a qualified veterinarian. In his absence, the medical officer of health or any other qualified officer vested with the power to inspect and examine poultry and meat intended for human consumption.

2.7 Medical Officer of Health — Any duly qualified medical officer with post-graduate qualification in public health.

2.8 Packer — The person who eviscerates, chills and packs the poultry.

2.9 Poultry — Chicken, including broilers and fowl (hens and cocks).

2.10 Slaughter Hall — The actual place in the dressing plant where poultry is slaughtered.

2.11 Slaughterman — The person who slaughters poultry.

2.12 Veterinarian — Any duly qualified veterinarian appointed or employed to act in the capacity.

3. DUTIES OF SLAUGHTERMEN AND PACKERS

3.1 For effectively carrying out the provisions of this standard it is necessary that slaughtermen and packers should be trained personnel and shall be licensed. They shall be free from communicable diseases and must undergo periodic medical check up.

3.2 The slaughtermen and packers shall be regularly protected against small pox and enteric group of diseases by suitable vaccination.

3.3 The packers shall not hold the dressing/flaying knives in their mouths or stick them into carcasses during operations. Suitable scabbard should be provided for keeping knives when not in use.

3.4 The slaughtermen and the packers should wear gum boots and protective dressing which are easily cleansible.

3.5 Evidence of disease in a carcass shall not be modified or obliterated by washing, rubbing, stripping or in any other manner, except under the direct supervision of the meat inspector and in accordance with his instructions.

3.6 In no case shall the intestines and glands be stripped, except by or under the direction of the meat inspector, and in any such case in which immediate stripping is necessary to preserve the marketability of the carcass, the organs shall not be entirely detached from the carcass until the same have been examined by the meat inspector and he has authorized detachment.

3.7 Notification of the intention to slaughter poultry for emergency reasons shall be forwarded to the meat inspector, and so far as practicable, all such animals shall be examined at the time of slaughter. If not so examined, the carcass, with the whole of the viscera and all parts thereof attached thereto, shall be detained until examined by the meat inspector.

3.7.1 In case where such poultry is examined at the time of slaughter, the meat inspector may require the carcass, the whole of the viscera and all parts thereof, unless obviously unfit for food, to be detained for 24 h in cold storage thereafter to enable a later inspection.

3.7.2 All carcasses of such poultry as may subsequently be passed fit for human consumption shall be ribbed or quartered before being released.

3.8 Any instrument that has been used on a tuberculous carcass or parts thereof, or on a carcass presenting lesions of other disease or suspected of being diseased, shall not be used again until it has been boiled for half an hour in water containing 3 percent, by weight, of sodium carbonate, or sterilized by any other suitable means accepted for bacteriological sterilization. No cloth shall be used for wiping the carcasses.

3.9 Where the carcass has not been examined by the meat inspector at the time of slaughter, the whole of the viscera and parts and organs thereof shall be kept, pending inspection, in such a way as to enable them to be identified, by labelling or otherwise, with the carcass from which they have been removed.

3.10 No carcass or part thereof shall be removed, or so placed as to prevent its ready identification, except with the authority of the meat inspector.

3.11 The feathers and inedible offals shall be removed, from dressing plant as early as possible and should not be allowed to be piled up.

4. GENERAL DUTIES AND INSTRUCTIONS TO MEAT INSPECTORS

4.1 The meat inspector shall enforce generally the regulations and provisions made in regard to the working of the dressing plant, which, *inter alia*, shall include:

- a) to attend the dressing plant during the hours fixed;
- b) to carry out the ante-mortem inspection of poultry according to the procedure laid down in 5;

- c) to carry out the post-mortem inspection according to the procedure laid down in 6;
- d) to keep a record of the number and kinds of poultry slaughtered along with the number and kinds of carcass and parts and organs condemned on account of different diseases;
- e) at the close of each day's work, to see that the dressing plants under him are thoroughly cleaned and disinfected according to the procedure specified in Appendix A and the condemned parts and organs duly destroyed and the offal removed to such places as may be appointed by the local authority; and
- f) to supervise handling and transportation of meat to reduce contamination. To periodically inspect the dressing plants for proper lighting, ventilation, drainage, water supply, flyproofing, cleanliness of floors, walls and implements and lairage accommodation.

4.2 The carcasses and viscera of all animals slaughtered should be inspected. This examination shall be methodical and as complete as possible in all cases. All carcasses inspected and passed as fit for human consumption shall be clearly stamped in several places giving the date of inspection and the initials of the meat inspector.

4.3 Stamping Ink — A solution containing 1 to 2 percent of fuchsine in acetic acid may be used. The fuchsine is dissolved in just enough acetic acid to bring about the solution and then glycerine is added to make up the required quantity. Alternatively, stamping ink prepared according to the following formula may be used:

Methyl violet	35 g
Cane sugar	450 g
Ethyl alcohol	1 363 ml
Water	1 636 ml

The sugar is dissolved in water, the alcohol then added and finally the methyl violet. The solution is stirred and allowed to stand for 12 h before use.

4.4 The meat inspector shall use knives, wipes and instruments kept specially for examining carcasses and parts thereof.

4.4.1 Knives and other instruments that have been used for cutting or examining any diseased organ, gland or tissue, shall not be used again for any purpose until they have been disinfected in boiling water or other suitable disinfectant. They should also be cleaned and properly disinfected at the end of each working day.

4.5 The carcass of a bird that is free from disease, and the carcasses and organs which are well nourished, shall be passed as fit for human consumption.

4.6 When all glands and other parts unfit for human food have been removed from a carcass under the supervision of the meat inspector and condemned, the carcass freed from these shall be passed as fit for human consumption.

4.7 If any abnormality is detected in any part of a carcass or in any organ, the whole carcass and all organs thereof shall be examined for evidence of any repetition of the local condition, or modification of the same in other parts, according to the procedure outlined in 6.

5. ANTE-MORTEM INSPECTION

5.1 The poultry shall be subjected to ante-mortem inspection prior to slaughter. The ante-mortem inspection shall be made on the day of the slaughter.

5.2 The birds showing any clinical evidence of a disease or condition that would result in condemnation of the carcass on post-mortem examination should be tagged as condemned. Such birds shall be segregated from the other poultry and held for separate slaughter, evisceration, and post-mortem inspection.

5.3 During inspection, the following details shall be noted:

- a) Evidence of cruelty to poultry by overcrowding and suffocation, exposure to extremes of temperature and transport over long distances without feed and water;
- b) Disease symptoms which may affect the general health of the poultry or deprecate the meat;
- c) Presence of scheduled infectious and contagious diseases or symptoms which may suggest that such disease is developing; and
- d) Species, sex, age and body temperature.

5.4 Condemned poultry, if not already dead, shall be killed in the casualty room only and shall not be conveyed into any department of the establishment used for edible products.

6. POST-MORTEM INSPECTION

6.0 The instructions given in 6.1 and 6.2 indicate the order and the method of inspection of all carcasses. As far as possible, the post-mortem inspection shall be conducted in the conditions simulating natural light.

6.1 The body cavity of every bird shall be opened and the liver, spleen, proventriculus, crop and intestines shall be drawn out through the transverse incision, in such a way that the organs should be still connected to the body.

6.2 Every bird shall be subjected to outer and inner inspection.

6.2.1 Outer Inspection — The outer inspection shall be carried out on the dorsal, lateral and ventral surfaces of the body, as well as the head, tail, wings and legs.

6.2.1.1 Attention shall be specially directed towards the diseases like eczematous diseases, wounds, lesions, staining, inadequate bleeding, haemorrhages in skin or in sub-cutaneous tissue or musculature, heavy contamination of intestinal contents, emaciation, fractures, muscular atrophy, presternal bursitis, joint and tendon sheath inflammation, abscesses and tumours; and conditions, which should determine segregation or condemnation of the bird.

6.2.1.2 The organs should be inspected for inflammatory processes or other pathological conditions which are occasionally seen on the surface of the crop due to the reasons like perforation by a foreign body, etc.

6.2.1.3 The connective tissue and the musculature on the medial surface of the thigh should be inspected by exposing by an incision. These should be scrutinized for major haemorrhages in the musculature, inflammatory-like changes in the connective tissue (abscesses are common at this site), or contamination through faecal matter or bile. Such contaminated birds shall be segregated, since, it shall not be possible to remove such intestinal contents in the subsequent spin-chilling treatment.

6.2.2 Inner Inspection — The inner inspection shall be carried out on the other abdominal and thoracic organs together with serous membranes and air sacs. Careful examination for an abnormal odour; or a collection of blood, exudate or transudate in the body cavity should also be carried out.

6.2.3 Instructions Regarding the Action to be Taken in the Event of Various Diseases of Broilers — Except otherwise recommended, the entire carcasses and all the parts and organs of broilers affected with any of the diseases given in 6.2.3.1 to 6.2.3.16, shall be disposed of as given in 6.3.

6.2.3.1 Chronic respiratory disease (inflammation of air sacs)

- a) Acute inflammation of air sacs, or a serous to sero-mucous deposit on serous membrane and organs of body cavity. In addition, the broilers may also have a sickly odour; and
- b) If the disease is of an acute nature, characterized by fibrinous pericarditis, fibrinous perihepatitis and fibrinous sero-sacculitis, or in emaciated birds the disease has resulted in collection of pus

in air sacs, on the serous membranes or on the surface of the organs (peritonitis), the carcass shall be condemned totally. The carcass may be passed after adequate cleaning where the acute symptoms of inflammation have disappeared, and where the disease present is in the form of healed (fibrous) pericarditis, fibrous deposits of connective tissues on the serous membranes, thickened membranes in air sacs, etc.

6.2.3.2 *Salpingitis* — When oviduct is filled with a more or less viscid mass of pus. There may be other complications in the form of peri-salpingitis and peritonitis.

6.2.3.3 *Inflammation of joint and tendon sheath*

- a) A greater or smaller swelling of the joints is observed-namely the hock and toe joints and of the tendon sheaths as well of the bursa presternalis in infectious synovitis. The cause of the disease is most often an infectious agent which belongs to the PPLO-group, but the disease can also be due to bacterial infections (*Salmonella*, *Staphylococci* and others); and
- b) Condemn totally in acute cases and in chronic cases where the disease has given rise to emaciation or the collection of a greyish, reddish or purulent fluid in the serous cavities. Where the disease appears only in the form of a thickening of the joints or of the tendon sheath and where no abnormal collection of fluid is found in the synovial space, the carcass may be passed after the affected parts have been condemned, provided that the bird is well nourished.

6.2.3.4 *Neurolymphomatosis*

- a) Nerve lesions and muscular atrophy are found occasionally in broilers as compared to the conditions found in fully grown birds. The predominant symptom is lymphoma formation in the ovary, while cell infiltration in other organs are more rare phenomena;
- b) Where the patho-anatomical lesions are pronounced or macroscopically recognizable cell infiltrations in organs, the birds should be totally condemned.

6.2.3.5 *Leukemia (visceral form)* — In broilers, leukemia is met as cell infiltration in the various organs.

6.2.3.6 *Tumours*

- a) In case of local, non-malignant tumours in the skin, the carcass may be passed after suitable removal of the affected portion; and
- b) In the case of tumour formation in organs, musculature (lymphoma), etc, the entire carcass shall be condemned.

6.2.3.7 Enteritis (*including coccidiosis*)

- a) Coccidiosis of the appendix and small intestine is common. In coccidiosis of the appendix, occasionally a local or diffuse peritonitis is observed as the result of perforation in the abdominal cavity; and
- b) In acute cases, with swollen and congested intestine as well as in chronic cases with diarrhoea, peritonitis, emaciation or abnormal odour from the carcass, the entire carcass should be condemned. Otherwise, the carcass may be passed in chronic cases after the organs have been condemned.

6.2.3.8 Hepatitis — Blackhead, an infective necrotising inflammation of the liver and appendix caused by *Histomonas meleagridis* and occurring particularly in turkeys is, however, occasionally seen in broilers. The entire carcass shall, however, be condemned.

6.2.3.9 Presternal bursitis — In chronic cases, where only a slight thickening of the skin or of the wall of the bursa is found, the carcass may be accepted. In cases where the inflammation has spread to the surroundings and gives rise to pronounced changes in the subcutaneous tissue or the musculature (possibly in the formation of abscesses) the carcass shall be totally condemned. Otherwise, the carcass may be passed after the affected parts have been condemned.

6.2.3.10 Abscesses

- a) Occasional abscess formation on the medial aspect of the thigh, where the subcutaneous tissue is also usually the site of extensive inflammatory-like changes; and
- b) In abscess formation in the above region or at other sites, the question whether the carcass should be totally condemned or whether the carcass should be approved after adequate cleaning must depend on the nature and degree of patho-anatomical changes found.

6.2.3.11 Haemorrhages

- a) The haemorrhagic syndrome may be seen in particular in the case of sulpha poisoning. Sulpha poisoned chickens are bile-stained. There are haemorrhages in the musculature (the breast), liver, heart and intestines. There may be haemorrhagic contents in the appendix (must not be confused with coccidiosis). Alterations may be observed in the intestine and in the proventriculus. Lifting of the horn layer in the gizzard on account of haemorrhagic effusions is typical in sulpha-poisoning. Finally, it might be mentioned that necrosis is occasionally found in the lungs; and

- b) **Totally condemned.** In case of haemorrhage into the body cavity, where the condition has given rise to wide-spread staining of organs and serous membranes, the whole carcass should be condemned. In traumatically produced haemorrhages as a result of fracture, rough treatment in catching the fowl or in slaughtering, the whole carcass should be condemned or the carcass should be passed after adequate cleaning, according to circumstances.

6.2.3.12 Abnormal staining—In staining, as a result of disease or inadequate bleeding out, the entire carcass should be condemned.

6.2.3.13 Abnormal odour

- a) This is most often the case of chickens which smell of fish or cod liver oil, or of chickens which have been contaminated with the contents of a non-resorbed yolk-sac which has broken during the removal of the organs. The yellowish, butter-like mass has often a penetrating smell of a 'soul dish-cloth'; and
- b) The entire carcass shall be condemned.

6.2.3.14 Emaciation

6.2.3.15 Contamination— Severely contaminated birds which cannot be cleaned satisfactorily shall be totally condemned.

6.2.3.16 Tearing, wounds, other lesions, etc

- a) If the broiler has been subjected to severe tearing during the machine treatment, the entire carcass should be condemned. Where the tearing has been of a minor extent, the bird can be accepted after removing the damaged parts;
- b) In the case of wounds or other lesions and the like, the carcass shall be condemned totally or in part, depending on the nature and character of the damage; and
- c) It should be noted that the liver should always be condemned when it has been subjected to severe tearing, as effective and satisfactory cleaning cannot be carried out. Likewise, the liver should be condemned when it is the site of staining or has a strongly impaired texture.

6.2.4 Instructions Regarding the Action to be Taken in Event of Various Diseases of Fowl — Except otherwise recommended, the entire carcasses and all the parts and organs of fowl affected with any of the diseases given in 6.2.4.1 to 6.2.4.13 shall be disposed of as given in 6.3.

6.2.4.1 Tuberculosis

- a) Tuberculous lesions in the liver are sharply defined and can usually be readily enucleated, but they are not gritty on section, for

calcification of avian lesions rarely occurs. The liver is markedly enlarged. Enlargement of the liver is also seen in leukemia, and in this affection the organ may at times show soft, grey areas of leukemic infiltration, but these foci may be distinguished from tuberculosis by the fact that they are less sharply delimited from the healthy tissue. The lesions in the spleen are similar to those in the liver and are easily enucleated but usually protrude from the surface of the spleen. Nodules may also be seen beneath the serous coat of the intestines. It is possible that the bone marrow is the seat of tuberculous lesions as frequently as the liver. Tuberculosis of the thymus gland occurs as a result of haematogenous spread but is only found in about 25 percent of cases of generalized tuberculosis and then usually in the advanced cases; and

- b) The carcass shall be condemned.

6.2.4.2 *Coli granuloma*

- a) This is a tuberculosis-like disease, which appears in the form of nodule formations in the appendix and in the duodenum. In addition, there occasionally occur nodules in the liver, spleen, lungs and kidneys. This is caused by *E. coli*, and
- b) If the disease appears only in the form of quite few nodules in the intestine, the bird can be passed after the intestinal canal and liver condemned, provided other conditions permit this. If the disease is wide-spread throughout the bird, the whole carcass should be condemned.

6.2.4.3 *Leukemia*

6.2.4.4 *Neurolymphomatosis*

6.2.4.5 *Salpingitis* — In acute cases and in chronic cases where the disease has given rise to the oviduct filled with large mass of pus as well as in case of complications (peritonitis) or in emaciation, the carcass should be totally condemned. In mild cases where the disease is of a chronic nature the carcass may be passed after satisfactory cleaning.

6.2.4.6 *Peritonitis*

6.2.4.7 *Tumours*

- a) The wall of the oviduct is often the site of a larger or smaller non-malignant tumour (leiomyoma); and
- b) The carcass may be passed after the removal of the oviduct. With regard to the judgement in other forms of tumours, proceed as in 6.2.3.6.

6.2.4.8 Ascites

- a) In tumour formation in the body cavities, chronic hepatitis and other disease, the body cavity is often the site of ascites; and
- b) The whole carcass shall be condemned.

6.2.4.9 Fowl pox

- a) This is caused by a filterable virus and occurs in one of the three types, or in combination, namely, (1) skin type, (2) mouth type, and (3) oculo-nasal type; and
- b) There is considerable systemic disturbance in types 2 and 3, so that affected carcasses may be sufficiently fevered to justify condemnation. Carcasses which are slightly affected in good bodily condition and properly bled, may be passed for food purposes after removal of the affected parts.

6.2.4.10 Fowl cholera

- a) This is a highly contagious, septicaemic disease caused by *Pasteurella oviseptica*. There may be reddening and congestion of the skin over the breast and abdomen of birds dying of the peracute disease, birds being usually in good condition and often in lay. Post-mortem examination reveals extensive pneumonia with marked petechial haemorrhages in epicardium, while the internal organs are intensively congested and the liver exhibits minute areas of necrosis. In other cases there may be evidence of a severe haemorrhagic enteritis; and
- b) The carcass shall be condemned.

6.2.4.11 Fowl pest

- a) Fowl pest includes the disease known as fowl plague and New-castle disease, both being virus infections and responsible for rapid and heavy mortality. Lesions in affected birds take the form of collections of mucus in the nasal and buccal cavities and a few petechial haemorrhages may be seen on the lining membrane of the proventriculus on the pericardium, heart muscle and gizzard fat; and
- b) The whole carcass shall be condemned.

6.2.4.12 Emaciation

6.2.4.13 Haemorrhages, abnormal staining and odour, etc — Proceed as in the case of broilers (*see 6.2.3.11, 6.2.3.12, and 6.2.3.13*).

6.3 Disposal of Condemned Carcass and Parts

6.3.1 All the condemned carcasses or parts of carcasses should be disposed of by one of the methods given from 6.3.1.1 to 6.3.1.5.

6.3.1.1 Steam treatment — This may be accomplished by processing the condemned product in a pressure tank under at least 3 kg/cm² of steam pressure or thorough cooking in a kettle or vat, and processing for a sufficient time to effectively destroy the product for human food purposes and preclude dissemination of disease through consumption by animals. Tanks and equipment used for this purpose or for rendering or preparing inedible products shall be in rooms or separate from those used for the preparation of edible products.

6.3.1.2 Incineration or complete destruction by burning.

6.3.1.3 Chemical denaturing, which shall be accomplished by the liberal application of crude carbolic acid, or kerosene or fuel oil, or any phenolic disinfectant which shall be used at least as a 2 percent emulsion or solution, to all carcasses and parts thereof.

6.3.1.4 Feathers may be effectively converted into proteinaceous feather meal and/or for stuffing into mattresses after processing.

6.3.1.5 Heads and feet may be converted into meals for stock feeding.

A P P E N D I X A

[Clause 4.1 (e)]

PROCEDURE FOR THE DISINFECTION OF THE DRESSING PLANTS

A-1. CHEMICAL DISINFECTION

A-1.0 The following chemicals are used as disinfectants.

A-1.1 Quicklime—freshly slaked.

A-1.2 Lime-Water—in concentrations of 1 : 3 or 1 : 20.

A-1.3 Chloride of Lime (CaOCl₂) (Bleaching Powder)—to be used suspended in water in concentrations of 1 : 3 or 1 : 20 (see IS:1065-1971*).

A-1.4 Concentrated Chloride of Lime—soluble in water and containing 70 percent active chlorine; to be used in concentrations of 2·5 or 7 percent (*w/v*) in water.

A-1.5 Chloramine-T (CH₂C₆H₄SO₂NClNa.3H₂O) (Sodium *p*-toluene Sulphonchloramide)—containing 22 percent active chlorine; to be used in concentration of 2·5 or 7 percent.

*Specification for bleaching powder, stable (*first revision*).

A-1.6 Solution of Cresol ($\text{CH}_3\text{C}_6\text{H}_4\text{OH}$)—stabilized by soap and diluted with water to a concentration of 2·5 percent (*w/v*).

A-1.7 Cresol-Sulphuric Acid Mixture—a mixture of two parts of crude cresol and one part of sulphuric acid diluted with water to a concentration of 3 percent.

A-1.8 Phenol ($\text{C}_6\text{H}_5\text{OH}$)—crude phenol diluted with water to a concentration of 3 percent (*see IS : 538-1969**).

A-1.9 Corrosive Sublimate (Mercuric Chloride) (HgCl_2)—one percent (*w/v*) aqueous solution. As this is poisonous, it should be neutralized after 24 h by a 0·5 percent (*w/v*) solution of potassium sulphide (K_2S).

A-1.10 Formalin — one percent (*w/v*) aqueous solution.

A-1.11 Quaternary Ammonium Compounds

A-2. EFFICACY OF DISINFECTANTS

A-2.1 The efficacy of a disinfectant depends upon the resistance of the contaminating agents which may be divided into the following two groups:

- a) Those which are easily destroyed together with those which do not leave the animal body. In these cases, a simple cleansing of walls, floors, doors and tools with limewater (1:20) or with a suspension of bleaching powder (1:20) suffices. For metal parts, an aqueous solution of cresol or phenol is preferable.
- b) Those which are not easily destroyed and which are communicable to other animals, for example, the agents responsible for fowl cholera and fowl pox.

In these cases, manure, straw, etc, should be burned, buried or disinfected by storage for a long period and in some cases, mixed with slaked lime. Liquids, such as blood and water, should be disinfected with a 30-percent suspension of chloride of lime. For walls, floors, instruments, etc, most of the disinfectants mentioned above may be used. Metal tools or instruments should be sterilized by heat if possible; otherwise, a solution of cresol or phenol is quite effective. This solution may also be used for wooden tools, rubber boots, etc.

A-3. OTHER MEANS OF DISINFECTION

A-3.1 Steam, dry heat and burning are also very effective. Instruments, tools, etc, may be disinfected by immersion in boiling water for 15 min. A 3-percent solution of washing soda (sodium carbonate) or soap is useful for this purpose. Hooks, handles, covers, etc, should be scrubbed in boiling water or solution of washing soda.

*Specification for phenol (carbolic acid) (*first revision*).

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	Unit	Symbol
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	Unit	Symbol
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	Unit	Symbol	Conversion
Force	newton	N	1 N = 1 kg·m/s ²
Energy	joule	J	1 J = 1 N·m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 Vs
Flux density	tesla	T	1 T = 1 Wb/m ²
Frequency	hertz	Hz	1 Hz = 1 c/s (s ⁻¹)
Electric conductance	siemens	S	1 S = 1 A/V
Pressure, stress	pascal	Pa	1 Pa = 1 N/m ²

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